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ABSTRACT

This learning module can be used as an orientation guide, inservice tool, or resource guide for hospital central processing department technicians and instructors. It contains information sheets, worksheets, worksheet answers, a posttest, and posttest answers on correct procedures for decontaminating, assembling, and wrapping the medical instruments used for vaginal and abdominal hysterectomies. Appendixes to the module include a glossary, illustrations of procedures involved in preparing and wrapping for sterilization (using both the envelope and oblong wrapping methods), abdominal and vaginal hysterectomy count sheets, and a list of references and suggested readings. (MN)

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ED283023

A MODULE

FOR

HOSPITAL CENTRAL PROCESSING TECHNICIANS

ON

DECONTAMINATION, ASSEMBLY AND WRAPPING CONCEPTS

OF

GYN HYSTERECTOMY INSTRUMENTS

BY

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CE047486

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ABSTRACT

Central processing technicians are a vital link in the chain connected to the healing process of almost all the patients cared for in a hospital. This module stresses the comprehension of good technique and skills needed to produce sterile GYN instruments and sets utilized in the operating room. The processing involves detailed steps utilized in the decontamination, assembly and wrapping of individual items and instrument sets that are accomplished in the central processing areas. A pre-entry checklist determines eligibility to begin the module and successful completion of a worksheet, which is included after each of the three phases, determines whether or not the technician can proceed to the next skill concept. Resources and a glossary are listed that may enable the technician and/or instructor to answer questions or problems that arise. This module can be utilized as an orientation guide, an inservice or continuing education tool, or as resource material for hospital CPD technicians and instructors.

INTRODUCTION

Instrument processing! This is a very important and critical mechanism in which the end results provide the operating room with sterile instruments that are necessary for performing emergency and elective procedures on patients. Imagine what would occur if this process was eliminated. Post-operative infections would soar! Diseases would be transmitted not only from patient to patient, but the physicians and the operating room staff would contact them as well.

Throughout history, aseptic technique has been the foundation on which modern day surgery has evolved. In 460 B.C., Hippocrates, who is considered the father of surgery, boiled water to irrigate operative wounds. During the second century A.D., Galen, a Roman, Boiled his instruments before using them in surgical procedures. In 1850, Louis Pasteur found that microorganisms (germs) were killed by heat in a process called fermentation. Joseph Lister, in 1860, learning about Pasteur's work, related the germ theory to infection. However, during this era, Semmelweis probably contributed one of the most significant impacts to the surgical process, that of washing his hands in between patients. All of these people and their methods have contributed to the beginning of the age of modern day surgery.

Because all patients admitted for surgery deserve and are entitled to the best care that is available, the central processing technician has an important responsibility in helping to render this care through knowledgeable skill in the handling and processing of surgical instruments. Therefore, this module is designed to provide the technician an avenue to learn, review, or update knowledge related to GYN instrument processing techniques. This self-instructional program is an overview of all important concepts related to the processing of GYN instruments.

DIRECTIONS

1. This module is self-instructional which allows you to progress at your own rate in order to master the specified facts or concepts. The program is constructed so that you can focus on techniques and skills that must be acquired to successfully complete all stages of instrument processing. It may also be utilized for orientation of new employees, inservice or continuing education of technicians to maintain competency. Hopefully, this module will be a valuable tool for educational purposes and a resource agent for you in the central processing department.
2. As you read this document, you are asked to respond to the questions. Writing responses and checking them for accuracy is a good reinforcer of learning.
3. Correct responses are found on pages 12, 21, 30, 41 and 49.
4. This module will take approximately one hour to complete.
5. A posttest, taken upon completion of the module, is found on page 44.
6. This document is yours to keep. Use it for future reference.

OBJECTIVES

INSTRUCTIONAL GOAL:

Central processing personnel will demonstrate ability in the processing of GYN hysterectomy instruments. The sets will be assembled according to proper identification, number and sequence as set forth in the hysterectomy instrument count sheet found in Appendicies F and G on pages 63-64; 65-66.

PERFORMANCE OBJECTIVES:

1. After observing a demonstration on removing hysterectomy instruments from a case cart located in the decontamination area, you will repeat the demonstration according to the standard procedure.
2. Following a discussion related to instrument weights, you will state two reasons for not loading instrument trays more than the 17 lbs. indicated in the American Sterilizer Company's standard of practi policies.
3. When asked, following a discussion concerning proper tray structure, you will be able to state two reasons why wire mesh trays are used for the processing of instrument sets at all times.
4. Following a demonstration on placement of instruments into wire trays, you will be able to choose all the heavy retractors to be placed on the bottom of a wire mesh tray before placing the lighter instruments on top of the retractors.
5. When asked, you will be able to list three reasons why all instruments are always unlocked before being placed in trays for washing.
6. Following a discussion and demonstration on washer cycle techniques, you will choose with complete accuracy the correct washer cycle.
7. Following a lecture on sonic usage, you will be able to apply two rules for safety involved in the operation of a sonic washer.

8. Given the reasons for utilizing a milk bath, you will be able to state two problems that occur if instruments are not always milked each time they are processed.
9. Given a towel and a towel covered table area, you will completely dry all instruments before attempting to assemble them.
10. Given the hysterectomy instrument list, you will identify with 100% accuracy all the individual instruments in the set.
11. Following a demonstration on stringing instruments on an instrument bar, you will repeat the demonstration according to the correct sequence, kind and number of instruments placed on the bar.
12. When requested, you will be able to classify scissors as to "mayo" or "metzenbaum" according to the description in the GYN instrument manual.
13. Following a discussion and demonstration on wrapping procedures, you will choose with 100% accuracy the correct size wrapper in which to wrap hysterectomy sets.
14. Given the theory on standards for wrapping instruments, you will express in detail the main reason for double-thickness wrappers being used to wrap instrument sets.
15. Following a demonstration on the oblong (square) method of wrapping a large instrument set, you will repeat the demonstration with 100% accuracy.
16. Given the reasons for the use of gas and steam indicator strips being placed in all instrument sets, you will prove efficiency by correctly choosing the proper indicator strip for each set processed.
17. When asked, you will classify materials in the set as metal or perishable according to the American Operating Room Nurses's sterilization standards.
18. Following a demonstration on proper sealing of instrument wrappers, you will correctly seal the instrument set, identify the set, label the set, initial the set, and stamp the current date and the expiration date 100% of the time.

PRE-ENTRY CHECKLIST

It is necessary that you have acquired certain skills before you begin work on this module. Therefore, please check "Yes" or "No" on the appropriate lines indicating whether or not you have mastered prerequisites.

Pre-entry Skills	YES	NO
1. I am able to follow detailed instructions printed on instrument count sheets.	_____	_____
2. I can make appropriate decisions based on CPD's policies regarding instrument processing.	_____	_____
3. I can lift 17 to 25 lbs. and carry this weight 25 to 50 feet.	_____	_____
4. I can identify GYN instruments by name and can pick them out of a set as requested.	_____	_____
5. I can maintain sufficient manual dexterity to wash, assemble and wrap instrument sets and individual items.	_____	_____
6. I am knowledgeable in gas and steam methods of sterilization.	_____	_____
7. I maintain clear concepts of clean/dirty and sterile/ unsterile products.	_____	_____

IF YOU HAVE ANSWERED "YES" TO ALL OF THESE QUESTIONS, TURN THE PAGE AND CONTINUE WITH THE MODULE. IF YOU HAVE ONE OR MORE "NO" ANSWERS, SEE THE LIST OF SUGGESTED REFERENCES LISTED ON THE BOTTOM OF THIS PAGE THAT CAN HELP YOU IN REFRESHING YOUR PREREQUISITE SKILLS.

Gruendemann, Barbara J; and Meeker, Margaret Huth. Alexander's Care of the Patient in Surgery, 7th ed. St. Louis: The C. V. Mosby Company, 1983.

Kirkwood, Edna K. "Guideline for Preparing and Sterilizing Wrapped Packs," AMSCO Technical Manual, (1983) pp. 1 - 7.

PRETEST

DIRECTIONS: Now that you have the necessary prerequisites, try your hand at the pretest which follows. This is an assessment of the objectives stated on pp. 3 - 4 before instruction. For the incomplete statements 1 - 10 below, one or more of the completions are correct. Decide which completion or completions are correct and fill in the blank with one of the following numbers next to "YOUR CHOICE" if:

1. A, B, and C are correct
2. A and C are correct
3. B and D are correct
4. Only D is correct
5. All are correct

YOUR CHOICE _____

The first question is answered for you.

1. In order to sterilize instruments, which method or methods would be most appropriate?

   A. Boiling instruments in water

   B. Soaking instruments in a disinfectant

   C. Heat instruments until too hot to touch

   D. Terminal sterilization (autoclaving)

   YOUR CHOICE 4 (Only D is correct)

2. Which method or methods are means of sterilizing instruments or implants?

   A. Gas

   B. Steam

   C. Cold (cidex)

   D. Boiling water

   YOUR CHOICE _____

1. A, B, and C are correct
2. A and C are correct
3. B and D are correct
4. Only D is correct
5. All are correct

3. Which item or items are necessary when wrapping instrument sets for sterilization?

   A. Label with identity of set

   B. Date of expiration

   C. Chemical indicator

   D, Sterilization tape

   YOUR CHOICE _____

4. Which conditions are necessary for proper assembly of instruments?

   A. Clean, dry and unlocked

   B. Lubricated (milked), flat and unlocked

   C. Sharp ends protected, stringers and a pan lined with a foam liner

   D. None of the above.

   YOUR CHOICE _____

5. What is the primary reason for sterilization of instruments?

   A. So patients in surgery are operated upon using warm instruments

   B. To give central processing technicians a standard to follow

   C. For adherence to CPD policies

   D. To kill all microorganisms (bacteria and spores, viruses, fungi, etc.)

   YOUR CHOICE _____

1. A, B, and C are correct
2. A and C are correct
3. B and D are correct
4. Only D is correct
5. All are correct

6. If the operating room called for a sterile punch biopsy forcep to be sent to the OR and you accidently dropped the packaged forcep on the floor, which action or actions would be most appropriate in this situation.

   A. Send the punch biopsy forcep to the OR anyways because it is packaged
   B. Call the OR and tell the nurse that you do not have a punch biopsy forcep because you will get in trouble if you tell the truth about the matter
   C. Ignore the call and do nothing about the request because you are busy
   D. Look for another sterile punch biopsy forcep and send it to the OR

   YOUR CHOICE _____

7. If a sterile item which the OR has requested has a tear in the wrapper, which action or actions would be considered appropriate?

   A. Send the item to the OR with the tear in the wrapper
   B. Quickly re-wrap and sterilize the item and hope the OR does not notice the delay
   C. Take care of the request later because you are assigned to wrapping sets
   D. Call the OR, explain the problem and let the OR decide whether or not the item is still wanted

   YOUR CHOICE _____

1. A, B, and C are correct
2. A and C are correct
3. B and D are correct
4. Only D is correct
5. All are correct

8. If an important GYN instrument is missing from the set you are assembling, which action or actions should you take?

   A. Call the OR to find out if the instrument was not returned to CPD from OR for a particular reason and follow their direction on whether or not to wrap the set

   B. Wrap the set without the missing instrument and process it because it will turn up later

   C. Search your work area and if the instrument is not found, try to locate another in the back-up instrument storage area. If one is not found, wrap the set

   D. None of the above

   YOUR CHOICE _____

9. If you do not recognize a particular GYN instrument and it is supposed to be wrapped and sterilized, which action or actions should you undertake?

   A. Leave the instrument alone and let someone else worry about it

   B. Look up the identification in the instrument resource book

   C. Place the instrument in the back-up storage bin letting someone else put it in its correct place

   D. Ask an experienced CPD technician, supervisor, or inservice instructor for the identification of the instrument and the appropriate processing method

   YOUR CHOICE _____

1. A, B. and C are correct
2. A and C are correct
3. B and D are correct
4. Only D is correct
5. All are correct

10. Which are <u>incorrect</u> weights of instrument sets to be sterilized?

    A. 50 lbs.

    B. 17 lbs.

    C. 30 lbs.

    D. None of the above

    YOUR CHOICE _____

DIRECTIONS:

For the following questions <u>11</u> - <u>16</u> below, the statements are either True or False. If the statement is True, circle A; if the statement is False, circle B.

11. Steam sterilization can be used to sterilize <u>all</u> instruments and materials?

    A. True

    B. False

12. Ethylene oxide mixture is a form of steam sterilization?

    A. True

    B. False

13. A cover gown or lab coat should be worn over scrub suits when leaving the central processing department?

    A. True

    B. False

14. Shoe covers are not necessary because you keep your shoes clean when working in the central processing area?

    A. True

    B. False

15. All hair should be covered when working in any of the CPD areas?

    A. True

    B. False

16. Washing your hands after completing personal grooming and hygiene acts is not necessary because instruments will be sterilized anyways?

    A. True

    B. False

TURN TO PAGE 12 TO CHECK YOUR ANSWERS.

PRETEST ANSWERS

MULTIPLE CHOICE:

1. 4
2. 1
3. 5
4. 2
5. 4
6. 4
7. 4
8. 2
9. 3
10. 2

TRUE OR FALSE

11. B - Steam sterilization cannot be utilized for perishable items.
12. B - Ethylene oxide mixture is a form of gas sterilization.
13. A
14. B - Shoe covers are necessary to prevent dirt, which is present on the soles of shoes, from being transferred into the CPD areas.
15. A
16. B - Washing your hands is always necessary when completing acts of personal hygiene because microorganisms are present on everyone's skin and could be transferred to materials present in the CPD areas.

IF YOU HAVE SUCCESSFULLY COMPLETED THE PRETEST BY ANSWERING ALL THE QUESTIONS CORRECTLY, YOU ARE TO BE CONGRATULATED. YOU KNOW THE SKILLS AND CONCEPTS DISCUSSED IN THE MODULE AND DO NOT NEED TO PROCEED ANY FURTHER.

HOWEVER, IF YOU HAVE NOT ANSWERED THE QUESTIONS WITH 100% ACCURACY, BEGIN READING THE MODULE. Appropriate directions will be given as you proceed.

DECONTAMINATION

GERM THEORY:*

Microbiology is the science that sutdies all forms of microorganisms, both plant and animal. A germ is an example of a living organism that is familiar to most people. They are so small that they can be seen only through the powerful lens of a microscope. They are classified according to size, shape, staining properties, spore-forming aspects, and whether or not they produce disease. Therefore, as a central processing technician, you should be able to visualize in your mind's eye the microorganisms that you can never see with the naked eye. Even though microbiology includes the study of yeasts, molds, fungi, rickettsia, and parasites, the two divisions of microorganisms of prime interest to you are bacteria and viruses. Bacteria, which are minute, one-celled, plant-like organisms come in one of three shapes. The coccus or spiral-shaped, the bacilli or rod-shaped, and the spirillum or spiral-shaped cause disease. Bacteria possess a cell wall, cytoplasm, and thin filaments called flagella which help them move about. Bacteria must obtain their food from outside sources and absorb their food directly through their cell walls. Some bacteria live where there is no air or oxygen and cannot live if air is present. These are called anaerobes. Other bacteria which require oxygen and air in which to grow are called aerobes. Some bacteria, especially the rod-shaped ones, have the ability to form resistant bodies called spores. These spores can produce a wall around their cells which make them extremely resistant to temperatures and moisture in order to destroy (kill) them. Unfortunately, spores can lie dormant for long periods of time and when favorable conditions appear, they can come to life.

Viruses are the most primitive form of life and are minute disease-producing particles that are not easily distinguished. Even in utilizing a microscope, there is difficulty in determining their status as living organisms. They are so small

* For definitions, refer to the Glossary of Terms found on pages 52 and 53.

that they cannot live outside of a living host. However, it is generally accepted and documented by research that methods capable of destroying bacteria will also destroy viruses.

Remember, only a few microorganisms cause disease. Many others are beneficial and, for example, are used in the production of antibiotics. The pathogens are the best known because these microorganisms cause disease in man and animals. But, in today's hospitals, most infections are nosocomial (hospital-acquired) and not pathogenic. The highest percentage are from the E. Coli, a gram-negative rod found in everyone's intestinal tract; this is the cause of the highest percentage of hospital-acquired disease. However, healthy individuals are not normally troubled by this bacteria because we all harbor it. But, a person who is ill, or weakened by surgery, is more susceptible to infections and rampant growth of this bacteria often causes infection in other parts of the body. Therefore, it is the pathogenic and E. Coli infections that you, as a central processing technician, must consider in your efforts of sterilizing instruments and items used on patients in your hospital. You are a prime determinant of effective infection control and indifference or carelessness make this control difficult. So, you must constantly wage a battle against infectious organisms to ensure both patient and your own safety.

Statistics show that large quantities of bacteria are present in the nose and mouth, on the skin and on the attire of personnel who work in the central processing area. Therefore, a locker room is provided where you can remove your personal clothing and don scrub suits to eliminate these large amounts of bacteria from being transported into the CPD area. Daily body cleanliness and clean, dandruff-free hair help keep this area free from excessive bacteria. Because hair acts as a filter when left uncovered, it collects bacteria which are released into the air during activity. Disposable surgical caps or hoods are worn to prevent this problem. Shoe covers help prevent cross contamination from other parts of the hospital. They must be put on before entering the area and removed before leaving CPD. When leaving the CPD area, a lab

* For definitions, refer to the Glossary of Terms found on pages 52 and 53.

coat should be worn to prevent contamination of the scrub suit worn underneath.

CLEANING:

Cleaning is the first step instruments undergo in the processing method. You are aware that if an instrument is not cleaned thoroughly, sterility can not be achieved. Therefore, there are specific steps that must be followed to ensure that cleanliness is accomplished. The case cart is transported from the operating room to the decontamination area of the central processing department via the 'dirty" cart lift. This case cart contains all the soiled linen, garbage and instruments used in a surgical procedure. As soon as the case cart is removed from the lift, the doors are opened and the garbage and linen bags are discarded into the appropriate receptacles. Next, the basins and pans are removed. After this, the instrument set is removed from the cart. To do this, slide the instrument set to the edge of the wire rack holding the tray. Take hold of the handles located on each side of the tray, slide off the edge, lifting the instrument tray and loading it on the rubber maid cart for transportation to the sink area. The instruments in the tray should weigh no more than 17 lbs. But, if they do, placing the set on the cart facilitates easy transport to the sink area.

Select a wire mesh tray from the wire rack and proceed to place the instruments into the tray. Place all the heavy retractors on the bottom of the tray and the lighter instruments on top of the retractors. If need be, use two trays instead of overloading the initial tray. Be sure to unlock all instruments so that all debris can be removed during the washing process. Inspect the tips of instruments before washing for signs of breakage, cracks, misalignment and raw edges. If any of these problems are found, wash the instrument by hand and set it aside for repair.

Next, place the wire tray into the sonic washer. Through this process, soil is removed by a physical shaking action. This ultrasonic cleaner is a machine which uses ultra-sound waves in water to clean the instruments by cavitation (the formation

* For definitions, refer to the Glossary of Terms found on pages 52 and 53.

of partial vacuums in a liquid by high-frequency sound waves). One important precaution is necessary in utilizing the sonic washer. Be sure to remove all sharps before placing the tray of instruments into the sonic washer. If you do not, the tips on needles and other sharps will protrude through the wire mesh causing breakage to the instrument or a possible safety hazard to the processor such as a puncture wound or cut. Instruments that are in poor condition are also a hazard to a patient in the operating room. Tips that are cracked or bent can break off during an operative procedure can be left in the patient. Therefore, it is essential that every percaution be undertaken to maintain the instruments in the best possible condition for surgical usage.

Set the sonic washer for 10 minutes. When the cycle is complete, remove the instruments from the sonic and again place the set on a towel lined rubber maid cart. Transport the cart with the instrument tray to the washer/sterilizer. Place the instrument tray into the washer/sterilizer basket and place the wire cover on top. Position the basket on the runner and push into the machine. Activate the cycle by pushing the start button. The cycle will run for 16 minutes.

In utilizing either the sonic or washer/sterilizer or both, make sure all sharps are removed such as scapel blades, tips from bovie cords, etc. No electrical instruments are to be submerged or placed in either the sonic or washer/sterilizer because if you do, the electrical wiring and intricate components will become moist causing a short in the electrical system.

In the decontamination area, all electrical equipment and small items such as screws and small instruments such as eye instruments are to be washed by hand to prevent breakage or destruction of vital components. This area has no allotment for careless or inappropriate handling of instruments. Instruments are expensive and their longevity for use in surgical procedures depends a great deal on how they are cleaned and cared for in the central processing area.

* For definitions, refer to the Glossary of Terms found on pages 52 and 53.

REVIEW of DECONTAMINATION SKILLS

Bacteria that are capable of forming spores make those bacteria resistant to heat. Microbiology is the science that studies all forms of plant and animal life. Three shapes in which bacteria are formed are sphirical or coccus, bacilli or rods, and spirillum or spiral. Bacteria that live in the presence of air and oxygen are called aerobes and those that live in environments without air or oxygen are called anaerobes. The highest percentage of nosocomial infections are caused by E. Coli, a bacteria commonly found in everyone's intestinal tract. Most microorganisms do not cause disease in man or animals. Pathogens are the microorganisms most likely to produce disease. Bacteria are found mostly everywhere, especially in the nose and mouth, skin, and on the attire of people working in CPD.

To remove instruments from a case cart, you should slide the tray to the edge of the rack and remove it by taking hold of the handles and slide it toward the end of the rack near the opening of the cart and then lift the tray out of the cart. Tips of instruments are always examined for breakage, misalignment, cracks, and raw edges. In utilizing a sonic washer, remove all sharps before putting a set into the sonic. No electrical equipment should be placed into a sonic at any time. The sonic washer cleans by ultrasound waves which clean by cavitation. No instrument tray should weigh more than 17 lbs. In placing any instrument into a tray before washing, unlock it so that all debris can be removed during the washing process. The washer/ sterilizer cycle runs for 16 minutes.

PLEASE GO TO WORKSHEET # 1 ON PAGE 18.

WORKSHEET # 1

DIRECTIONS: Let's review your knowledge of the skills you have just learned. For the incomplete statements 1 - 3 below, one or more of the completions are correct. Decide which completion or completions are correct and fill in the blank with one of the following numbers next to "YOUR CHOICE" if:

1. A, B, and C are correct
2. A and C are correct
3. B and D are correct
4. Only D is correct
5. All are correct

YOUR CHOICE _____

The first question is answered for you.

1. In removing instruments from the case cart, you should:

   A. Slide the instrument tray to the edge of the rack

   B. Remove the cart rack with the instrument tray sitting on top of the rack

   C. Remove the tray by taking hold of the handles, sliding toward the end of the rack near the opening of the cart and lift out of the cart

   D. None of the above

   YOUR CHOICE __2__ (A and C are correct.)

2. Tips of instruments are examined for:

   A. Breakage

   B. Misalignment

   C. Cracks

   D. Raw edges

   YOUR CHOICE _____

3. In utilizing a sonic washer, which precautions are necessary?

   A. Place all instruments in the sonic except glass

   B. Place all electrical cords in separately

   C. Leave needles on bovie (cautery) cords so that they do not get lost

   D. Remove all sharps before putting the set into the sonic washer

   YOUR CHOICE _____

DIRECTIONS:

For the following statements 4 - 9 below, fill in the blanks with the correct responses.

4. Bacteria are capable of forming _____ which make them resistant to heat.
5. _____ is the science that studies all forms of plant and animal life.
6. Three shapes in which bacteria are formed are _____, _____, and _____.
7. Bacteria that live in the presence of air and oxygen are called _____.
8. The highest percentage of nosocomial infections are caused by _____.
9. A washer which removes soil through a physical shaking action is called a _____ washer.

DIRECTIONS:

For the following statements 10 - 19 below, the statements are either True or False. If the statement is True, circle A; if the statement is False, circle B.

10. Bacteria are classified according to size, shape, staining properties, spore-forming abilities, and whether or not they produce disease?

    A. True

    B. False

11. Most microorganisms cause disease?

    A. True

    B. False

12. Pathogens do not cause disease in man or animals?

    A. True

    B. False

13. Large quantities of bacteria are present in the nose and mouth, skin, and on the attire of people working in the central processing department?

    A. True

    B. False

14. Ultrasound waves clean instruments by cavitation?

    A. True

    B. False

15. Instrument trays, when full, should weigh no more than 17 lbs?

    A. True

    B. False

16. When placing instruments into trays before washing, the instruments must be unlocked so that all debris can be removed during the washing process?

    A. True

    B. False

17. The washer/sterilizer cycle runs for 16 minutes?

    A. True

    B. False

18. Pathogens are the only cause of hospital infections?

    A. True

    B. False

19. Bacteria which require no air or oxygen in their environment are called anaerobes?

    A. True

    B. False

TURN TO PAGE 21 TO CHECK YOUR ANSWERS.

WORKSHEET # 1 ANSWERS

MULTIPLE CHOICE

1. 2
2. 5
3. 4

FILL IN THE BLANKS

4. Bacteria are capable of forming spores which make them resistant to heat.
5. Microbiology is the science that studies all forms of plant and animal life.
6. Three shapes in which bacteria are formed are spirical - coccus, bacilli - rods, and spirillum - spiral.
7. Bacteria that live in the presence of air and oxygen are called aerobes.
8. The highest percentage of nosocomial infections are caused by E. Coli.
9. A washer which removes soil through a physical shaking action is called a sonic washer.

TRUE OR FALSE

10. A
11. B Most microorganisms do not cause disease. In hospitals it is primarily the pathogens and E. Coli microorganisms which cause disease.
12. B Pathogens are responsible for producing disease in man and animals.
13. A
14. A
15. A
16. A
17. A

18. B Pathogens are not the only microorganisms responsible for causing infection in the hospital. E. Coli microorganisms are also responsible for a major portion of hospital infections.

19. A

IF YOU HAVE SUCCESSFULLY COMPLETED THE DECONTAMINATION SKILLS PORTION OF THIS MODULE WITH 100% ACCURACY, CONGRATULATIONS! YOU ARE MASTERING THE MATAERIAL. CONTINUE READING THE MODULE.

IF YOU HAVE NOT SUCCESSFULLY MASTERED THE MATERIAL, HOWEVER, REREAD THIS SECTION ON PAGES 13 - 17 AND REPEAT WORKSHEET # 1. IF YOU DO NOT MASTER THE MATERIAL WITH 100% ACCURACY THIS TIME, PLEASE SEE THE INSTRUCTOR BEFORE ATTEMPTING TO CONTINUE.

ASSEMBLY

GENERAL INSTRUMENT CONSIDERATIONS:

The central processing technician is responsible for the use, handling and care of hundreds of surgical instruments a day. A basic knowledge of how these instruments are to be protected will help in their maintenance. Because the United States does not have an agency that reviews or sets standards for surgical instruments, the quality is set by the individual manufacturers. If the instruments are inferior, they will not withstand normal usage. Thus, the consumers will not receive full return on their investments. Instruments that are properly cared for should last about 10 years or more and a reputable company will stand behind its products. Therefore, it is your responsibility to know the surgical instruments and their proper uses and care.

There are four main categories of instruments: sharps, clamps, holding instruments, and retractors. Sharps include scissors and scalpels which are instruments with sharp or cutting edges as the usable parts. Clamps are generally used as a method of hemostasis and are the instruments that make surgery possible by preventing excessive or fatal blood loss in the course of dissection. The grasping or holding instruments are used for tissue retraction or suturing. They must possess a firm grip while inflicting a minimum of trauma to the tissues they hold. Retractors determine the exposure of the operative field. The surgeon needs the best exposure possible while operating so as to inflict a minimum of trauma to the surrounding tissue.

It has become an AORN standard of practice and national hospital policy to have instrument count sheets in all instrument sets. This is done to ensure correct instrument counts not only during surgery but also during the processing of the sets. Instruments should be used only for the purpose for which they were designed. Through proper use and reasonable care, the instruments' lives are prolonged and their quality protected. Therefore, handle them gently. Bouncing, dropping, and setting heavy

equipment or items on top of them should always be avoided. Do not throw instruments together or into heaps. They should be handled individually or in small groups. Sharps and delicate instruments should be handled with upmost care and discretion.

Before assembly, you should inspect each instrument for imperfections. An instrument should function perfectly to prevent needlessly endangering a patient's life and increasing operative time because of the failure of an instrument. Forceps, clamps, and other hindged instruments must be inspected for alignment of jaws, teeth and for stiffness. Ratchets should hold firmly yet release when necessary. The tips of jaws and teeth should meet perfectly, and joints should work smoothly. The serrations on the ends of forceps must be perfectly fitted, so that blood flow may be occluded but so as not to injure or cut the vein or artery. The edges of scissors should be tested for sharpness because to cut, they must be beveled smoothly. All instruments should be checked for worn spots, chipping, dents, cracks, or sharp (raw) edges.

GYN INSTRUMENTS:

These instruments are used for procedures in operations involving the structures of the female reproductive system. These procedures can be performed either through the abdominal or vaginal routes. Therefore, the instruments are generally placed into sets for vaginal or abdominal procedures. The following instruments are used in abdominal hysterectomy sets: tenaculums (single and double tooth), singley forceps, clamps (haney, rodger, kocher, kelly, allis and babcock), 10" needle holders, scissors (mayo and metzenbaum, curved and straight), and an O' Connor Sullivan retractor. The following instruments are commonly found in vaginal hysterectomy sets: tenaculums (single and double tooth), clamps (haney, rodger, kocher, and allis), heany needle holders, retractors (small deavors and eastman), and a weighted speculum. Instruments sometimes used in addition during vaginal procedures are: uterine curettes, hank dilators, godell dilator, and forceps (ring, biopsy, polyp, dressing, and russians).

In order to prepare and wrap instrument sets, the sets should weigh 17 lbs. or less. Inspect the instruments, observe for cleaniness and proper functioning. Make sure they are dry. To ensure that steam will contact all surfaces of the instruments, open and unlock all of them and place on an instrument stringer according to type, number and sequence. Place instruments in a mesh-bottom wire tray which is designed for effective sterilization, drying and orderly arrangement of the instruments. To assist in the drying of the instruments in the sterilization cycle, place an absorbant cloth towel or foam liner in the bottom of the tray. A drying problem can occur because the concentration of the metal mass can cause formation of localized moisture. An internal steam indicator is placed in the center of the instruments with the ink side away from the metal surfaces so that no toxic substance, like ink, comes in contact with the instruments.*

All sets have instrument count sheets which are placed in the set with the identification, size, sequence and number of each instrument that is supposed to be placed in that set. You are to account for and accurately record next to the required number of instruments listed on the sheet, the actual number of each specific instrument and at the bottom of the sheet, the total number of all the instruments. Next, write in the date of processing and your initials on the designated lines. When this is completed correctly, you are ready for the next phase of processing, wrapping of the instrument sets.**

For definitions, refer to the Glossary of Terms found on pages 52 and 53.

* Review Appendicies B and C on pages 54 - 57.

** Review Appendicies F and G on pages 63 - 66.

REVIEW OF ASSEMBLY CONCEPTS

There are four major categories of instruments. These include sharps, clamps, holding instruments, and retractors. Instrument count sheets are to be placed in all instrument sets before sterilization according to AORN's standard of practice. Instruments should always be handled individually or in small groups, not thrown into heaps, when being processed. All instruments should be inspected for worn spots, chipping, dents, cracks, or sharp edges before handling both for your own personal safety and patient safety. A cloth towel or foam liner should be placed in the bottom of the wire mesh tray to assist in the drying of the instruments.

Scissors can be called for by their individual names or for their usage. They are commonly called metzenbaum, mayos, nurses, and suture scissors. The following instruments are called by the following names interchangeably:

1. Scalpel - knife
2. Oschner - kocher
3. Hemostat - clamp
4. Balfour - retractor
5. Schnid - beckman
6. Adson - forcep

A wire mesh tray is designed for effective sterilization of instruments, drying of instruments, and orderly arrangement of instruments. Instruments commonly found in a GYN set would include curettes, haneys, and rodger clamps. Sequence, number, and kind refer to the stringing of instruments on an instrument bar, the utilization of an instrument count sheet for assembling instruments, and the placement of instruments into a tray.

PLEASE GO TO WORKSHEET # 2 ON PAGE 27.

WORKSHEET # 2

DIRECTIONS: Let's review your knowledge of the skills you have just learned. For the following statements 1 - 7 below, the statements are either True or False. If the statement is True, Circle A; if the statement is False, circle B.

1. There are only two major categories of instruments?
   A. True
   B. False
2. It is not necessary, according to AORN's standard of practice, to have instrument count sheets placed in all instrument sets before sterilization?
   A. True
   B. False
3. To properly handle instruments, they should not be thrown in heaps but should be handled individually?
   A. True
   B. False
4. Inspection of instruments is not necessary before assembly because there are many instruments from which to choose if one is not perfect?
   A. True
   B. False
5. All instruments should be checked for worn spots, chipping, dents, cracks, or sharp edges before assembling?
   A. True
   B. False
6. A cloth towel or foam liner is placed in the bottom of a wire mesh tray to assist in the drying of instruments?
   A. True
   B. False

7. Metzenbaum, mayo, nurses and suture refer to scissors?

   A. True

   B. False

DIRECTIONS:

For the following statement below, match the term with its appropriate meaning.

Each answer may be used only once.

8. Match the following instruments with their appropriate meanings.

A. Scalpel	_____	1. Kocher
B. Oschner	_____	2. Forcep
C. Hemostat	_____	3. Knife
D. Balfour	_____	4. Beckman
E. Schnid	_____	5. Clamp
F. Adson	_____	6. Retractor

DIRECTIONS:

For the incomplete statements 9 - 11 below, one or more of the completions are correct. Decide which completion or completions are correct and fill in the blank with one of the following numbers next to "YOUR CHOICE" if:

1. A, B, and C are correct
2. A and C are correct
3. B and D are correct
4. Only D is correct
5. All are correct

YOUR CHOICE _____

9. A wire mesh tray is designed for:

   A. Effective sterilization of instruments

   B. Drying of instruments

   C. Orderly arrangement of instruments

   D. None of the above

   YOUR CHOICE _____

10. Which combination of instruments would commonly be found in a GYN set?

   A. Doyen, satinsky, and payr clamp

   B. Weitlander, hemoclip appliers, and cystoscope

   C. Rasp, chisel, and osteotomes

   D. Curettes, haneys, and rodger clamps

   YOUR CHOICE _____

11. Sequence, number, and kind refer to which of the following?

   A. Stringing instruments on an instrument bar

   B. Utilization of an instrument count sheet for assembling instruments

   C. Placement of instruments into a tray

   D. None of the above

   YOUR CHOICE _____

PLEASE CHECK YOUR ANSWERS ON PAGE 30.

WORKSHEET # 2 ANSWERS

TRUE OR FALSE

1. B There are four major categories of instruments: sharps, clamps, holding instruments, and retractors.
2. B AORN's standard of practice policy encourages the use of instrument count sheets for all instrument sets.
3. A
4. B Inspection of instruments is necessary to determine whether or not there are worn spots, chipping, dents, cracks, or sharp edges which can be a hazard to both the patient and the central processing technician.
5. A
6. A
7. A

MATCHING

8. A. 3
   B. 1
   C. 5
   D. 6
   E. 4
   F. 2

MULTIPLE CHOICE

9. 1

10. 4

11. 1

IF YOU HAVE SUCCESSFULLY COMPLETED THE ASSEMBLY SKILLS PORTION OF THIS MODULE WITH 100% ACCURACY, CONGRATULATIONS! CONTINUE READING THE MODULE.

IF YOU HAVE NOT SUCCESSFULLY MASTERED THE MATERIAL, HOWEVER, REREAD THIS SECTION ON PAGES 23 - 26 AND REPEAT WORKSHEET # 2. IF YOU DO NOT MASTER THE MATERIAL WITH 100% ACCURACY THIS TIME, PLEASE CONSULT THE INSTRUCTOR BEFORE ATTEMPTING TO CONTINUE.

WRAPPING

MATERIALS:

The prime function of a package containing a sterile instrument or set is to ensure that the sterility is maintained until that package is opened intentionally. In choosing proper wrappers, 100% cotton muslin or water repellent non-woven wraps are suitable for steam and ETO (gas) sterilization. The water repellency provides added protection after sterilization from contamination caused by handling with moist hands and from absorbing humidity from the air. Because of the uniform density, the wrappers also act to filter out airborne bacteria.

Materials used for hospital wrapping and packaging should provide a seal of proven integrity. They should be durable to resist tears and punctures and not delaminate when opened or allow for resealing. All materials must be free of pinholes and suitable for printing or labeling for package identification. The manufacturers of the materials should have documentation available to validate that the materials are effective barriers to microorganisms as vehicles of contamination under prescribed storage and use conditions. The criteria for determining the contamination of package contents is reflected in the fact that contamination is event related rather than time related. Thus probability of contamination occurring increased with time because a contamination event is more likely to occur as time increases.

Materials used for wrapping and packaging should be free from toxic ingredients and non-fast dyes and also be nonabrasive. Therefore, preprinted marking labels or adhesives should not bleed through to the items in a package. Chemicals and laundry processing should not have deleterious effects on woven materials and also should meet or exceed National Fire Protection Association standards. All sterilized packages should allow opening without significant risk of product contamination, damage or personal injury. Packages that may serve as a sterile drape upon opening should drape easily and be memory free. Also, materials should not pill, delaminate or flake off.

* For definitions, refer to the Glossary of Terms found on pages 52 and 53.

To maintain a shelf-life, the following criteria should be considered:

1. Single-wrapped (two-layers of 140-thread-count woven fabric, one layer of either 270 - 280 thread-count woven fabric, or disposable material).
2. Double-wrapped (four layers of 140-thread-count woven fabric, two layers of 270 - [illegible]- thread-count woven fabric, or disposable material). Disposables include two-way crepe paper, paper, plastic, non-woven or paper-plastic combinations, and protective covers.

METHODS:

In wrapping instruments, either the envelope or the oblong (square) style is implemented. Wrappers should be of adequate size, not excessive, because too large of a size may cause a drying problem. All trays or instruments are wrapped sequentially using the envelope method. In utilizing the oblong method, large trays may be double wrapped using both wrappers simultaneously; otherwise, the sequential method is used.

To envelope wrap a set, first lay down a set of two wrappers with a towel placed under the instrument tray. The towel will help absorb condensation and provide protection to the wrapper so that holes do not develop in it. Next, lift the corner of the wrapper nearest you and fold it back as you place it over the tray in a cuff formation. This cuff facilitates aseptic opening by the OR nurse. All wraps must open easily and lie flat or drape easily over the OR table without forcing the wrap. In other words, the wrapper should have no memory and non-woven and muslin wraps accomplish this well. Next, bring one side over and make a cuff fold, bring the remaining flap over the tray toward you, make sure edges are parallel with the tray. Then, turn the tray around and tuck under the end leaving a corner exposed for easy opening. In order to provide the greatest degree of sterilization assurance, double wrap all instruments and sets. Therefore, repeat the above wrapping process by placing the set or instrument in the center of the second wrap and proceeding.

Now, pull off a strip of steam or gas sterilizer indicator tape and seal the

package with the tape in the same direction as the fold to minimize contamination caused by disturbance. Identify the contents of the package by writing on the tape. Write your initials on the tape also. Remember, the accuracy of the count and the integrity of the wrap are your responsibility. Place the item on the proper sterilizer cart and stamp a label on the set or item containing the date of process, sterilizer number, load number, and expiration date before sterilization. Affix this label to the gas or steam indicator tape. Now, the item or set is ready for sterilization.

In utilizing the oblong (square) method of wrapping, lay out two wrappers flat on the table. Place a towel in the center and place the set on top of the two wrappers. To use this method, one or both wrappers may be used at a time. If only one wrapper is used at a time, the method is called sequential. To start, fold the far edge of the top wrap over the set. Next, fold back the wrap and cover the set. Repeat the process with the other, opposite side of the wrapper. Now, take the right corner of the wrapper and fold it over the set making a cuff and tuck the cuff under the folded layer. Repeat the process on the left side and seal the outer cuffed edge with the indicator tape. Follow the same process for identification and dating of the set as above.*

STEAM STERILIZATION:

Moist heat in the form of saturated steam under pressure is the most reliable and frequently used sterilization method. It is dependable because of the ability of steam to quickly penetrate and of the moist heat to kill microorganisms. Items are sterile if they have complete exposure to saturated steam for 12 minutes at 250°F, or 3 minutes at 270°F. The total cycle can be from 8 to 60 minutes depending on how items are wrapped, density of the load, and the method of steam sterilization employed. Steam can be used on fabrics, instruments, metal basins and flasked liquids. It is the most economical sterilizing agent, leaves no toxic residue, and allows for short exposure times. Steam is not suitable for heat and moisture sensitive items such as certain plastics, oils, greases or powders. Avoid overloading the sterilizer. Loose

* Review Appendicies D and E on pages 58 - 62.

packing allows free access of steam and escape of air. Most important of all, operate the sterilizer properly.

Moisture is formed at the beginning of the steam sterilization cycle as the instruments are being heated to the sterilizing temperature. As steam gives up its heat, vaporization occurs causing a change from steam to liquid. Once the desired temperature is obtained, further heating and condensation stop occurring but the moisture which has formed stays during the sterilization process. This moisture is trapped in absorbent products or remains as droplets on metal and other non-absorbant materials.

Equipment made of metal or rubber does not absorb any moisture during the heat-up phase of sterilization. Rather, the moisture collects and lies on the surface or rolls off. Therefore, it is necessary that absorbant liners be placed beneath them to retain the accumulated moisture so that the moisture will be dried in the drying phase of the cycle. Moisture formed during sterilization must be removed so that a sterile item maintains sterility in a sterile environment. Moisture that remains in the wrappers provides a pathway for bacteria to migrate through these materials. So, an effective drying phase must be utilized to prevent such opportunities.

Drying is the removing of condensate from an item. By using an exhaust system in the sterilizer, vapor is removed and heat is produced to dry the materials. You must personally make sure that all items being removed from the steam sterilizer are dry to ensure the sterility of the package contents.

GAS STERILIZATION:

Ethylene oxide in the pure form is not recommended for sterilization in the liquid or vapor state because of its flammability and toxic hazards. Therefore, it is mixed with inert gases such as carbon dioxide or fluorinated hydrocarbons to render them unflammable. Temperature, moisture, concentration, and time are important factors in using gas sterilization for perishable items. The aeration of articles is essential so that residual gas is allowed to dissipate from the materials to an accept-

able tolerance level prior to usage.

The ethylene oxide process requires a careful balance of several control factors for effective destruction of microorganisms. These factors include an ambient temperature of 130° to 135°F for most heat and moisture sensitive products. The cycle time is 2 to 4 hours with a gas concentration and relative humidity of 40 to 60%. Gas sterilization has several advantages. Not only is it effective against all types of microorganisms but it is non-corrosive and will not damage items. High pressures are not necessary. However, it does require long exposure times, and compared with steam, it is expensive. Items sterilized by this method must be withheld from use until considered safe, i.e., aerated sufficiently to avoid toxic affects. Some materials such as glass and metal do not absorb gas and require no aeration. Placement of mechanical aerators should be near gas sterilizers to assure minimum exposure of sterilizer loads to the environment prior to aeration.

Materials which should not be used for packaging items to be gas sterilized include nylon film, saran wrap, polyvinyl chloride (PVC) film, aluminum foil, and canvas. These materials are either too tough to penetrate, hold too much gas residual, or are so porous that once sterility is achieved, it cannot be maintained in storage. The most desirable wrappers are combination paper/plastic or non-woven materials. While polyethylene can be used in 3 mil thickness, no item should be wrapped with two layers of polyethylene because of the resultant moisture and ETO barrier. Therefore, when loading a gas sterilizer, do not stack packaged items together too tightly. Remember, it is most important to maintain strict adherence to the manufacturer's instructions for operation of a gas (ETO) autoclave.

* For definitions, refer to the Glossary of Terms found on pages 52 and 53.

REVIEW OF WRAPPING CONCEPTS

Large GYN sets may be wrapped utilizing the oblong (square) method when using both wrappers simultaneously. The envelope method of wrapping can also be used to wrap GYN sets and individual instruments. The primary function of a sterile package is to ensure that the instrument or set maintains sterility until you open it intentionally. The identification of the set and your initials as the person wrapping the set must be written on the sterilization tape before it is autoclaved. It is an event related rather than a time related factor which determines whether or not a set has been contaminated. All materials used in the wrapping of sets should be free from memory, the ability to return to its original shape and countour. Metal instruments such as curettes and clamps should be steamed sterilized. Those items that contain plastics, oils, greases, or powders cannot be steam sterilized but rather must be gas sterilized. Metal does not absorb moisture during the heat-up phase of sterilization.

Materials used in the wrapping of sets should be free from toxic and non-fast dyes. Also, they should be nonabrasive to avoid scratching the instruments. All sets being steamed sterilized require a steam indicator tape, those which are gased require a gas indicator tape. Metal, rubber and liquids utilize steam indicator tapes. Perishable items require a gas indicator tape. If the chemical indicator strip does not change after completion of the sterilization cycle, you should consider the set not sterile. Also, consider the possibility of facuty indicator tape. Gas sterilization is effective against all microorganisms and is non-corrosive to the items being sterilized.

PLEASE GO TO WORKSHEET # 3 ON PAGE 38.

WORKSHEET # 3

DIRECTIONS: Let's review your knowledge of the skills you have just learned.

For the following statements 1 - 5 below, fill in the blanks with the correct response.

1. Large GYN instrument sets may be wrapped utilizing the _____ method when using both wrappers simultaneously.
2. The _____ method of wrapping can also be used to wrap GYN sets and individual instruments.
3. The prime function of a package containing an instrument is to ensure that _____ is maintained until the package is opened intentionally.
4. The date stamped on the set must contain the _____ date and the _____ date.
5. Two things that are written on the sterilization tape are the set _____ and your _____.

DIRECTIONS:

For the following statements 6 - 10 below, the statements are either True or False.

If the statement is True, circle A; if the statement is False, circle B.

6. The probability of contamination occurring is event rather than time related?
   A. True
   B. False
7. Materials used for wrapping should be free from memory?
   A. True
   B. False
8. The following items such as curettes and clamps are items not to be steam sterilized?
   A. True
   B. False

9. Steam is suitable for plastics, oils, greases, and powders?

   A. True

   B. False

10. Metal equipment absorbs moisture during the heat-up phase of sterilization?

   A. True

   B. False

DIRECTIONS:

For the incomplete statements 11 - 14 below, one or more of the completions are correct. Decide which completion or completions are correct and fill in the blank with one of the following numbers next to "YOUR CHOICE" if:

1. A, B, and C are correct
2. A and C are correct
3. B and D are correct
4. Only D is correct
5. All are correct

YOUR CHOICE _____

11. In wrapping sets, which conditions are necessary for the materials being used?

   A. Free of toxic ingredients

   B. Free of non-fast dyes

   C. Nonabrasive

   D. None of the above

   YOUR CHOICE _____

12. In utilizing an instrument set, which condition or conditions require the use of a steam indicator tape?

    A. Metal instruments

    B. Rubber tubing

    C. Liquids

    D. Perishable materials

    YOUR CHOICE _____

13. If the steam chemical indicator in a set does not change after going through the sterilization cycle in the steam autoclave, what action or actions should you take?

    A. Consider the set not sterile

    B. Re-wrap and re-sterilize the set

    C. Consider the possibility of faulty indicator tape

    D. Consider the set sterile

    YOUR CHOICE _____

14. There are several advantages of gas sterilization:

    A. Effective against all microorganisms

    B. High pressure is necessary to ensure sterilization

    C. It is non-corrosive

    D. Short exposure time

    YOUR CHOICE _____

PLEASE CHECK YOUR ANSWERS ON PAGE 41.

WORKSHEET # 3 ANSWERS

FILL IN THE BLANKS

1. Large GYN instrument sets may be wrapped utilizing the oblong (square) method when using both wrappers simultaneously.
2. The envelope method of wrapping can also be used to wrap GYN sets and individual instruments.
3. The prime function of a package containing an instrument is to ensure that sterility is maintained until the package is opened intentionally.
4. The date stamped on the set must contain the current date and the expiration date.
5. Two things that are written on the sterilization tape are the set identification and your ititials.

TRUE OR FALSE

6. A
7. A
8. B Curettes and clamps are metal instruments that are steam sterilized.
9. B Gas is suitable for plastics, oils, greases, and powders.
10. B Moisture rolls off of metal equipment in the heat-up phase of sterilization and cannot absorb any moisture. Therefore, a towel lined tray is necessary to absorb the moisture that is formed with metal instruments in the steam autoclaving process.

MULTIPLE CHOICE

11. 1

12. 1

13. 1

14. 2

IF YOU HAVE SUCCESSFULLY COMPLETED THE WRAPPING SKILLS PORTION OF THIS MODULE WITH 100% ACCURACY, CONGRATULATIONS! THERE ARE A FEW MORE PAGES TO READ. PLEASE CONTINUE.

IF YOU HAVE NOT SUCCESSFULLY MASTERED THE MATERIAL, HOWEVER, REREAD THIS SECTION ON PAGES 32 - 37 AND REPEAT WORKSHEET # 3. IF YOU DO NOT MASTER THE MATERIAL WITH 100% ACCURACY THIS TIME, PLEASE CONSULT THE INSTRUCTOR BEFORE ATTEMPTING TO CONTINUE.

CONCLUSION

As a central processing technician, you alone are responsible for the safety and well-being of more patients in the hospital than any other person. This is because you are capable of guaranteeing that every instrument that is used in the operating room which has been processed in the CPD area is sterile. This means that it is totally free from any living harmful organism that can cause an infection.

Remember, it is by your efforts that patients who receive equipment that is processed in your area are ensured of a safe product tor their care. To help you reach this goal, you have been exposed to the primary areas of processing instruments which are vital tools needed to produce a sterile product. Do you now think you can meet this challenge?

PLEASE GO TO THE POSTTEST ON PAGE 44.

POSTTEST

DIRECTIONS:

For the following statements 1 - 10 below, the statements are either True or False. If the statement is True, circle A; if the statement is False, circle B.

1. Terminal sterilization (autoclaving) is the most appropriate method of sterilization?
   A. True
   B. False
2. Instruments must be clean, dry, and unlocked to assure their proper assembly and sterilization process?
   A. True
   B. False
3. The sharp ends of instruments do not need to be protected in the assembly process?
   A. True
   B. False
4. A cloth lined or foam lined pan is necessary in steam sterilization to facilitate drying of instruments?
   A. True
   B. False
5. The primary reason for sterilization of all instruments is to kill all microorganisms?
   A. True
   B. False
6. Items requested by the operating room should take priority over routine tasks?
   A. True
   B. False

7. It is permissible to send items that will be used on patients to the operating room with tears and holes in their wrappers without consulting the OR personal first?

   A. True

   B. False

8. Missing items from instrument sets do not need to be located before attempting to wrap the set in question?

   A. True

   B. False

9. The instrument resource book is an excellent tool which can be utilized for identification of unfamilar instruments?

   A. True

   B. False

10. The maximum weight of all instrument sets should not exceed 30 lbs?

    A. True

    B. False

DIRECTIONS:

For the following statements 11 - 16 below, fill in the blanks with the correct response.

11. _____ sterilization can be used to sterilize most metal and nonperishable items.

12. Ethylene oxide is a form of _____ sterilization.

13. A _____ _____ should be worn when leaving the central processing area.

14. The _____ and _____ dates are necessary controls to be stamped on an item or set before sterilization.

15. The _____ of the set is written on the sterilizing tape to properly distinguish this set from other sets.

16. Microbiology studies all forms of _____.

DIRECTIONS:

For the incomplete statements 17 - 22 below, one or more of the completions are correct. Decide which completion or completions are correct and fill in the blanks with one of the following numbers next to "YOUR CHOICE" if:

1. A, B, and C are correct
2. A and C are correct
3. B and D are correct
4. Only D is correct
5. All are correct

YOUR CHOICE _____

17. Aerobes can live in an environment which contains:

A. Air

B. No air

C. Oxygen

D. No oxygen

YOUR CHOICE _____

18. Diseases in hospitals may be caused by:

A. Pathogens

B. Nosocomial infections

C. E. Coli

D. None of the above

YOUR CHOICE _____

1. A, B, and C are correct
2. A and C are correct
3. B and D are correct
4. Only D is correct
5. All are correct

19. A sonic washer is capable of producing the following:

    A. cavitation

    B. Ultra-sound waves

    C. Removal of soil and debris

    D. None of the above

    YOUR CHOICE _____

20. The following instruments should be washed by hand to provent damage:

    A. Large retractors

    B. Ophthalmology instruments

    C. Glass

    D. Screws

    YOUR CHOICE _____

21. A wire mesh tray is designed for:

    A. Effective sterilization of instruments

    B. Drying of instruments

    C. Orderly arrangement of instruments

    D. None of the above

    YOUR CHOICE _____

1. A, B, and C are correct
2. A and C are correct
3. B and D are correct
4. Only D is correct
5. All are correct

22. Which instrument or instruments are <u>not</u> found routinely in a GYN set?

A. Rodgers

B. Haneys

C. Kellys

D. Doyens

YOUR CHOICE _____

PLEASE CHECK YOUR ANSWERS ON PAGE 49.

POSTTEST ANSWERS

TRUE OR FALSE

1. A
2. A
3. B All sharp ends of instruments need to be protected in the assembly process so they do not injure the patient or the processor and also to protect the instrument from breaking, cracking, or bending during the assembly process.
4. A
5. A
6. A
7. B Items that are sent to the OR with holes or tears in the wrappers are to be considered contaminated. Therefore, it is essential that the OR personnel be notified of this situation so that they can make a decision about the item.
8. B All items that are missing from a set of instruments need to be located before attempting to assemble the set. Incomplete instrument sets are useless in some surgeries and replacements are not always available immediately.
9. A
10. B The maximum weight of instrument sets should not exceed 17 lbs.

FILL IN THE BLANKS

11. Steam sterilization can be used to sterilize most metal and nonperishable items.
12. Ethylene oxide is a form of gas sterilization.
13. A lab coat (cover gown) should be worn when leaving the central processing area.
14. The current and expiration dates are necessary controls to be stamped on an item or set before sterilization.
15. The identity of the set is written on the sterilizing tape to properly distinguish this set from other sets.

16. Microbiology studies all forms of microorganisms.

MULTIPLE CHOICE

17. 2

18. 1

19. 1

20. 3

21. 1

22. 1

APPENDIX A:

GLOSSARY OF TERMS

GLOSSARY OF TERMS

AEROBIC - capable of growing in the presence of free oxygen.

ANAEROBIC - capable of growing in the absence of free oxygen.

AUTOCLAVE - a device used for sterilization of materials by gas or steam under pressure.

BACILLUS - a rod-shaped bacteria, a genus of the family Bacillacae.

BACTERIA - single celled vegetable microbes that reproduce by splitting; this is one type of microorganism which is of great concern to hospital personnel because it is difficult to destroy and produces many different diseases.

CASE CART - system used by which all sterile supplies needed in an area, such as the operating room for a surgical procedure, are placed in a closed covered cart in the central processing area and delivered to the appropriate area.

CAVITATION - the rapid formation and collapse of low pressure bubbles in liquids by means of mechanical forces.

CHEMICAL INDICATOR - a common name for Sterilization Process Monitor.

CLEANING - removal of all visible dust, oil and any other foreign matter.

COCCUS - a spherical bacterium; form of a word from the Greek meaning "berry."

CONTAMINATION - the act of making something impure or unclean.

CONTROL NUMBER - an assigned number used to more easily identify equipment, rather than to use the hard to find, hard to read serial number.

DECONTAMINATION - a process whereby instruments, needles and other items are freed of the contaminating agents and rendered safe for human handling without further recourse to individual protective measures.

EXPIRATION DATE - date indicating coming to an end; i.e. end of effective shelf-life of a supply item.

FUNGUS - a class of vegetable organisms such as mushrooms, toadstools and molds.

GERM - lay term for microorganisms.

GERM THEORY OF DISEASE - the analysis of a set of facts establishing that germs or

disease causing microorganisms do exist.

GRAM STAIN - a differential stain by which bacteria are classed as gram-positive or gram-negative depending upon whether they retain or lose the primary stain (crystal violet) when subjected to treatment with a decolorizing agent.

GYN - abbreviation for gynecology.

GYNECOLOGY - the science dealing with diseases which are peculiar to women.

HYSTERECTOMY - excision of the uterus.

MEMORY - the inherent ability of a substance to return to its original shape and contours.

MICROBIOLOGY - the study of microorganisms.

PATHOGENIC ORGANISMS - microorganisms which cause diseases.

ROD - a straight, slim mass of substance related to microorganisms; i.e. rod-shaped bacterium.

SPIRILLUM - a spiral-shaped form of bacterium.

SPORE - a resistant body formed by certain microorganisms; resistant resting cells; primitive unicellular reproductive bodies; hard to kill; the "seed" stage of certain bacteria; very resistant to destruction because of hard outer layer; formed when certain bacteria are dried, but starts growing when exposed to moisture and warmth.

STEAM - water vapor at 212^{o}F (100^{o}C) or above.

STERILIZATION - a process by which all forms of microbial life including bacteria, viruses, spores, and fungi are completely destroyed.

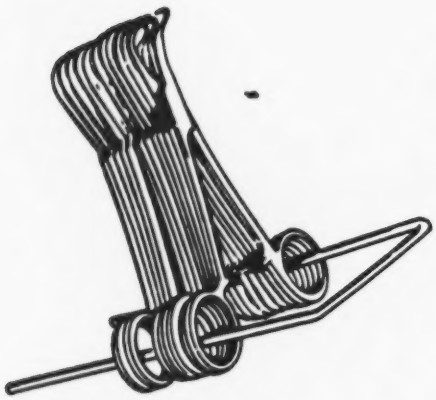
VIRUS - one of a group of minute infectious agents that grow only in living tissues or cells; can be observed only under an electron microscope.

WASHER/STERILIZER - mechanical equipment for decontamination.

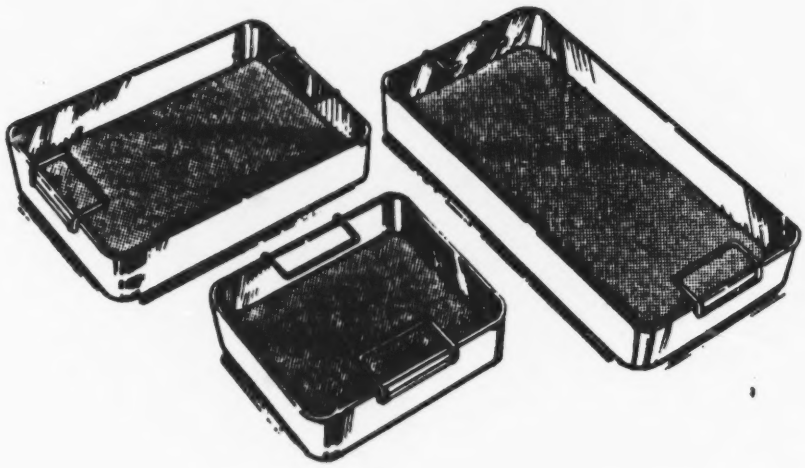
APPENDIX B:

INSTRUMENT SETS: PREPARING FOR STERILIZATION

INSTRUMENT SETS: PREPARING FOR STERILIZATION



OPEN, UNLOCK, OR DISASSEMBLE INSTRUMENTS.



USE MESH-BOTTOM TRAYS.

* Appendix B is from:

Kirkwood, Edna K. " Guideline for Preparing and Sterilizing Wrapped Packs," AMSCO Technical Manual, (1983) pp. 1 - 7.

APPENDIX C:

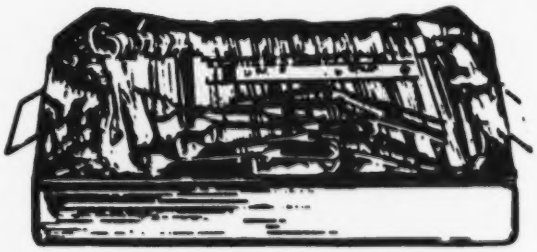
INSTRUMENT SETS: WRAPPING FOR STERILIZATION

INSTRUMENT SETS: WRAPPING FOR STERILIZATION

PLACE OPENED HUCK TOWEL IN BOTTOM OF TRAY.

PLACE INSTRUMENTS ON TOWEL.

FOLD TOWEL EXCESS OVER INSTRUMENTS.



PLACE CHEMICAL INDICATOR ON INSTRUMENTS.

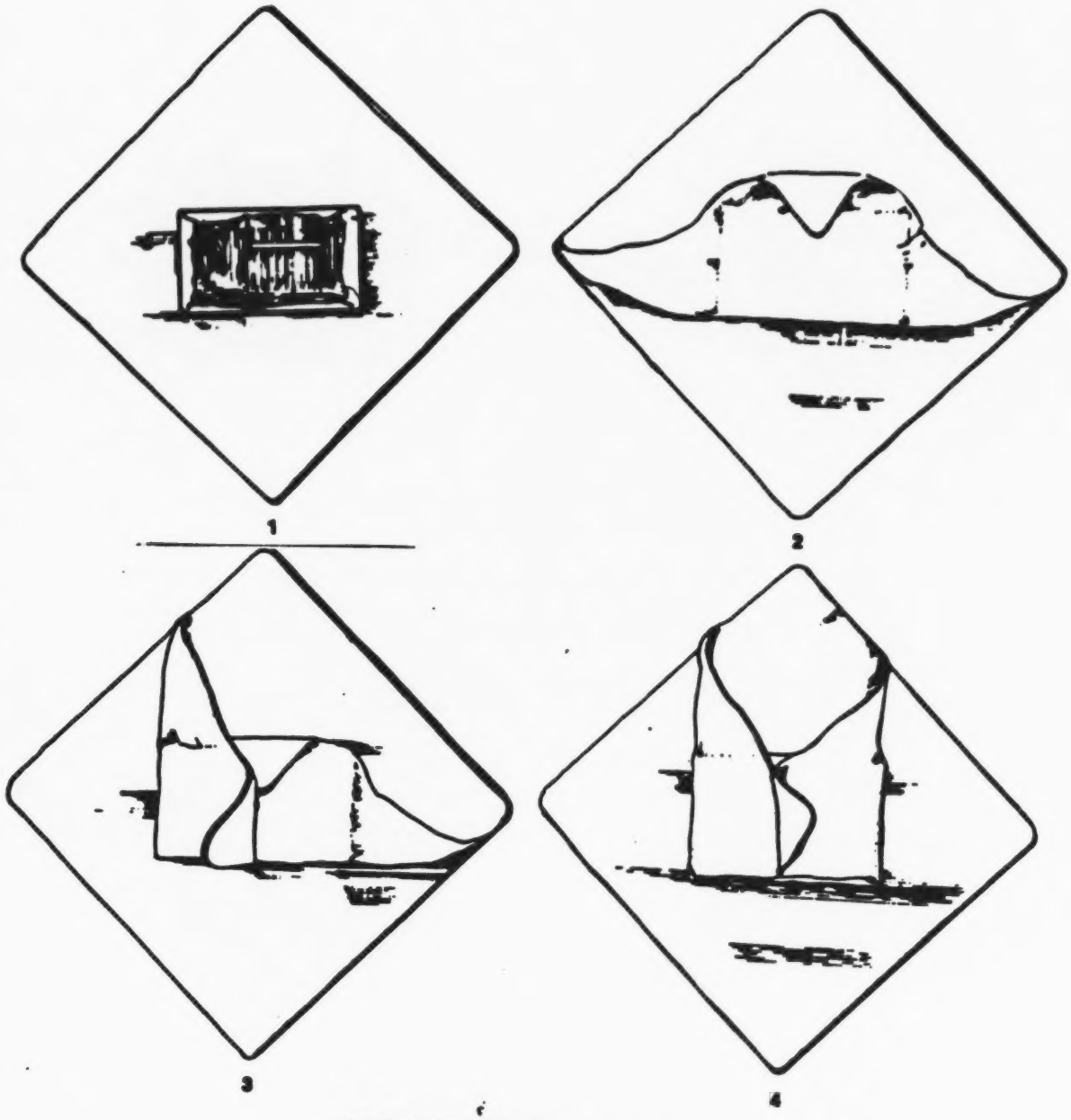
* Appendix C is from:

Kirkwood, Edna K. "Guideline for Preparing and Sterilizing Wrapped Packs," AMSCO Technical Manual, (1983) pp. 1 - 7.

APPENDIX D:

INSTRUMENT SETS: ENVELOPE METHOD OF WRAPPING

INSTRUMENT SETS: ENVELOPE METHOD OF WRAPPING

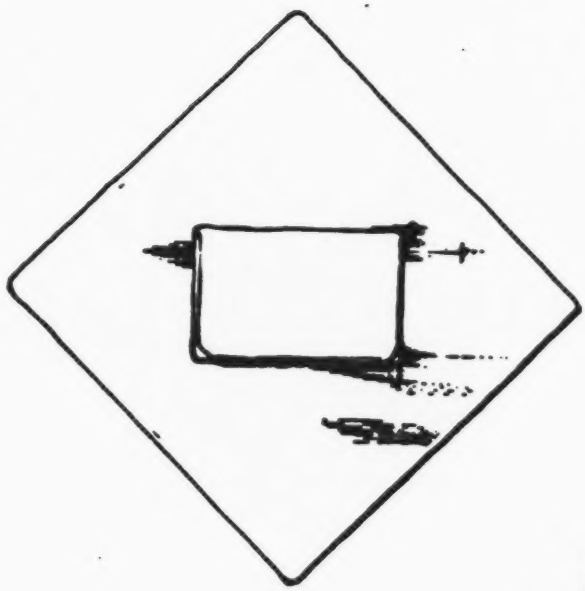


ENVELOPE METHOD — Instruments.

* Appendix D is from:

Kirkwood, Edna K. "Guideline for Preparing and Sterilizing Wrapped Packs," AMSCO Technical Manual, (1983) pp. 1 - 7.

INSTRUMENT SETS: ENVELOPE METHOD OF WRAPPING CONTINUED



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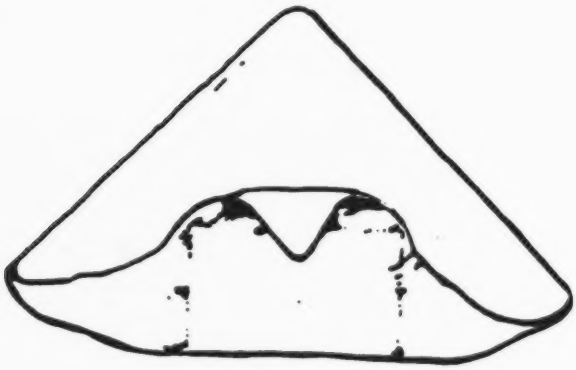

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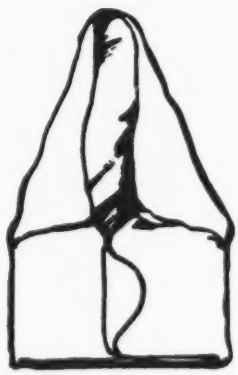

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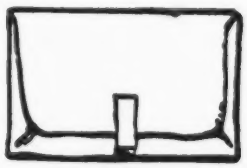

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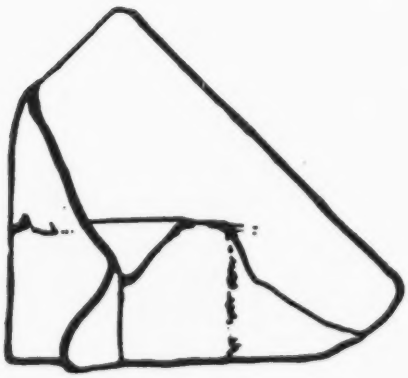

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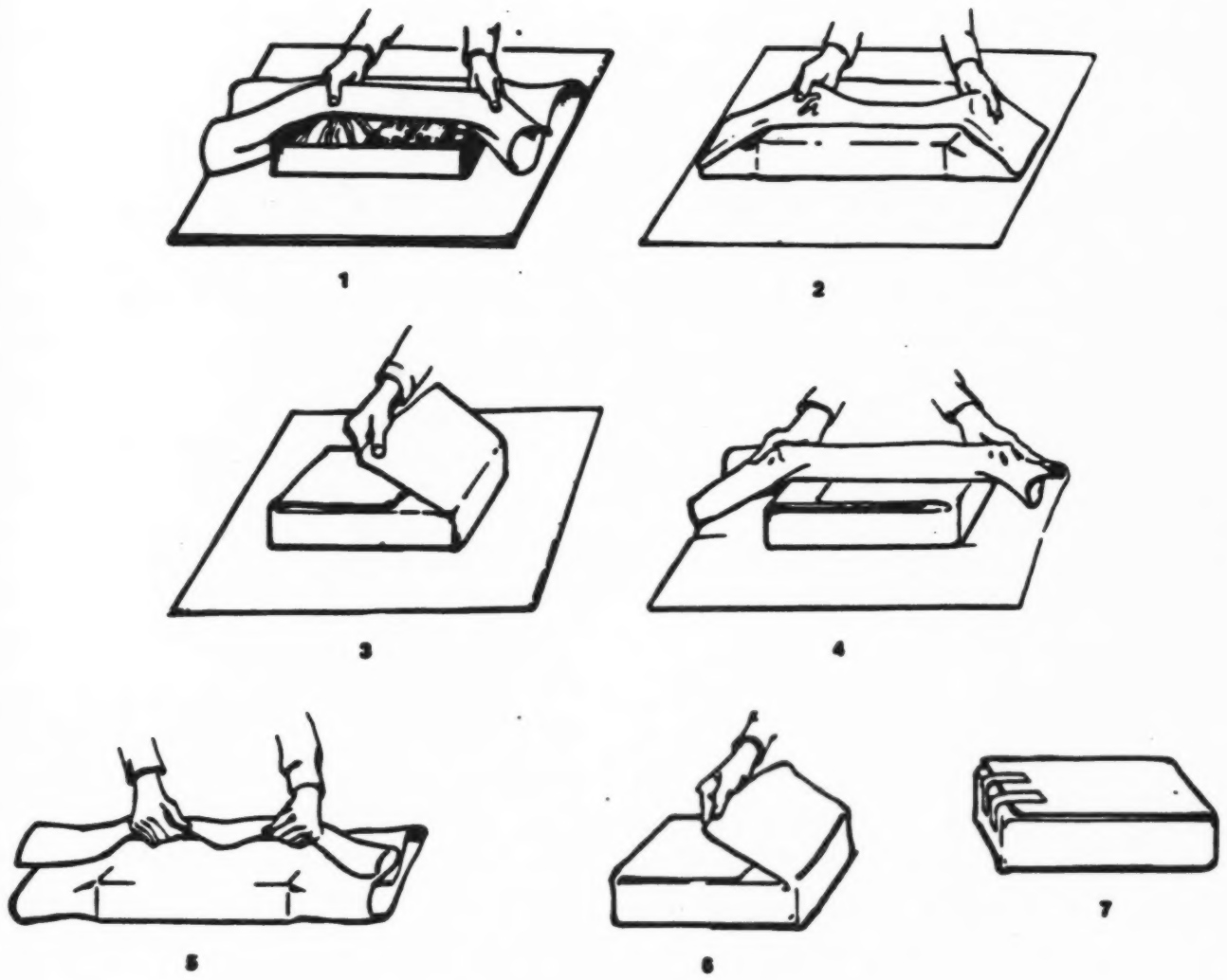
* Appendix D is from:

Kirkwood, Edna K. "Guideline for Preparing and Sterilizing Wrapped Packs," AMSCO Technical Manual, (1983) pp. 1 - 7.

APPENDIX E:

INSTRUMENT SETS: OBLONG (SQUARE) METHOD OF WRAPPING

INSTRUMENT SETS: OBLONG (SQUARE) METHOD OF WRAPPING



OBLONG METHOD — Instruments.

* Appendix E is from:

Kirkwood, Edna K. "Guideline for Preparing and Sterilizing Wrapped Packs," AMSCO Technical Manual, (1983) pp. 1 - 7.

APPENDIX F:

ABDOMINAL HYSTERECTOMY SET: INSTRUMENT COUNT FORM

ABDOMINAL HYSTERECTOMY SET

INSTRUMENT COUNT FORM

CODE #	DESCRIPTION	QTY	CPD	PRE-OP	POST-OP
	Needle Holder Long, 10".....	2	___	___	___
	Metz Long Curved.....	1	___	___	___
	Mayo Long Curved.....	1	___	___	___
	Mayo Long Straight.....	1	___	___	___
	Kelly Long.....	4	___	___	___
	Heaney Long.....	4	___	___	___
	Rodgers Long.....	4	___	___	___
	Kochners Long.....	4	___	___	___
	Tenaculum Long Single Tooth.....	1	___	___	___
	Tenaculum Long Double Tooth.....	1	___	___	___
	O'Connor-Sullivan w/Blades.....	4	___	___	___
	Singley Forceps Long.....	2	___	___	___
	Allis Clamps Long.....	2	___	___	___
	Babcocks Long.....	2	___	___	___
	Total Instrument Count:	33	___	___	___
	Counted By:		___	___	___

C.P.D. USE ONLY: Date Assembled: _____

Wrapper Size: 54 x 72
Wrapped How: Square
Sterilized: Steam

Expiration Date: 1 Month
Stored In: CPD

SPECIAL INSTRUCTIONS:

* Appendix F is an instrument count sheet from:

St. John Hospital Division of the St. Clair Health Corporation
Detroit, Michigan.

APPENDIX G:

VAGINAL HYSTERECTOMY SET: INSTRUMENT COUNT FORM

VAGINAL HYSTERECTOMY SET

INSTRUMENT COUNT FORM

CODE #	DESCRIPTION	QTY	CPD	PRE-OP	POST-OP
	Eastman Lateral Rectractor.....	1	___	___	___
	Weighted Speculum.....	1	___	___	___
	Small Deaver.....	1	___	___	___
	Haney Needle Holders.....	2	___	___	___
	Haney Clamps.....	4	___	___	___
	Rodger Clamps.....	4	___	___	___
	Long Kochers.....	4	___	___	___
	Short Kochers.....	4	___	___	___
	Short Allises.....	6	___	___	___
	Long Allises.....	2	___	___	___
	Single Tooth Tenaculum.....	1	___	___	___
	Double Tooth Tenaculum.....	1	___	___	___
	Total Instrument Count:	31	___	___	___
	Counted By:		___	___	___

C.P.D. USE ONLY: Date Assembled: _____

Wrapper Size: 54 x 54
Wrapped How: 2 Square
Sterilized: Steam

Expiration Date: 1 Month
Stored In: CPD

SPECIAL INSTRUCTIONS:

* Appendix G is an instrument count sheet from:

St. John Hospital Division of the St. Clair Health Corporation
Detroit, Michigan.

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